



Thrive Aviation
1410 Jet Stream Drive
Suite 202
Henderson, NV 89052

January 17, 2022

SUBMITTED ELECTRONICALLY TO: Federal Docket Management System, www.regulations.gov
U.S. Department of Transportation Docket Operations West Building,
Room W12-140
1200 New Jersey Avenue, SE
Washington, D.C. 20590-0001

Re: Thrive Aviation, Petition for Exemption from 14 CFR §§ 135.297

Dear Ladies and Gentlemen:

Pursuant to 14 CFR part 11, Thrive Aviation (Thrive) hereby petitions for an exemption from §§ 135.297, to allow Thrive to mitigate for the largest threat to aviation safety; Loss of Control In-Flight (LOC-I).

The requested relief, through its associated rationale, as asserted in the document attached hereto, follows National and International Upset Prevention and Recovery Training (UPRT) guidance and regulations which heretofore has not been practiced by FAA 135 operators. If granted, the petition expands the knowledge and skill of our pilots, provides for an increased level of safety, and a clear public benefit.

The petition outlines the criteria a proposed UPRT provider to administer the training described in the attachment. Despite application of exceedingly high standards and industry best practices described, the request contemplates that AFS 280 audit and approve the training program. Much of the training proposed exceeds existing FAA standards for UPRT, none of which contemplate the delivery of training outside of the simulator domain. For the foregoing reasons, and as more fully explained in the attachment, we request the FAA grant our request. Please let me know if you have any questions or require any additional information.

Sincerely,

Mark Rubin, Chief Pilot
Mark.Rubin@flythrive.com

Cc: Michael McComb, Michael.McComb@faa.gov



Thrive Aviation: Petition for Exemption

Contents

- 1 Introduction**
- 2 Petitioner**
- 3 14 CFR Sections for Exemption**
- 4 Extent of Relief and Rationale**
- 5 Public Benefit**
- 6 Increased Level of Safety**
- 7 UPRT Instructor and Evaluator Requirements**
- 8 Exemption Privileges Outside the United States**
- 9 Federal Register Summary**
- 10 Additional Information Supporting the Request**



Thrive Aviation: Petition for Exemption

1. Introduction

This petition seeks to improve aviation safety and benefit the public by providing enhanced training to reduce the number one cause of fatal accidents, Loss of Control In-flight (LOC-I), through an integrated curriculum (see Attachment A) including: academic briefings, computer-based training, and an airborne UPRT Platform, culminating in repeatable and comprehensive Upset Prevention and Recovery knowledge and skill.

Reducing the threat of LOC-I is directly supported by providing an alteration to the §§ 14 CFR Part 135.297 – Pilot in command: Instrument proficiency check requirements, by replacing one 135.297, and or one 135.293, check once every 24 months with Upset Prevention and Recovery Training (UPRT). The intent of this proposal is for any Part 135 qualified crewmember be eligible to take the UPRT course once every 24 months (+/- allowable grace provisions) provided they a) have completed two (2) Part 135.297 checking events before attending the UPRT event and b) comply with the pilot experience requirements of 135.4 (a)(2) and 135.4(a)(4).

This alteration would only be applicable to pilots who:

- 1.1 Hold a Pilot-In-Command (PIC) Type Rating for the operator's airplane, and,
- 1.2 Have received two consecutive §§ 14 CFR Part 135.297 instrument proficiency events (within grace provisions as described in 14 CFR Part 135.301, 135.343, 135.323 (b)), and,
- 1.3 Meet the instrument recency of experience requirements as set forth in 14 CFR Part 61.57 (c), and
 - 1.3.1 Allows for a Flight Standards Service (AFS-280, Air Carrier Training Systems) Part 142 provider to conduct UPRT training in an Airborne Training Platform in lieu of the instrument proficiency check required by §§ 135.297, the recurrent pilot testing requirements required by §§135.293, and the recurrent training required by §§ 135.351, to be substituted once every 24 months with UPRT.
 - 1.3.2 Thrive Aviation accepts the responsibility of ensuring participating pilots maintain §§ 61.57 (c) currency between §§ 135.297 evaluations.
- 1.4 Rationale. This measure greatly enhances safety by providing Integrated Upset Prevention and Recovery Training (UPRT) to include combined academics, and an airborne UPRT platform, once every two-years. Note: An "Airborne UPRT Platform" and its associated minimum requirements are described in section 4.

¹ The alteration sought is similar to what is already allowed in 135.293 (d) whereby an "instrument proficiency check required by §§ 135.297 may be substituted for the competency check required by this section (§§ 135.293) for the type of aircraft used in the check." However, in this case the alteration sought is whereby an instrument proficiency check required by §§ 135.297, and the recurrent pilot testing requirements required by §§135.293, and the Recurrent training required by §§ 135.351, may be substituted once every 24 months with Upset Prevention and Recovery Training.



Thrive Aviation: Petition for Exemption

1.5 Additional Rationale. The addition of in-flight UPRT provides knowledge as petitioned herein, establishes skills, knowledge, and experience that exceeds the §§ 135.297, 135.293 and 135.351 regulations. The specified UPRT competencies complement standard instrument currency as regularly maintained through normal flight operations with instrument currency in the upset domain through the addition of in-flight UPRT.

1.6 Additional Rationale. Once a pilot has repeatedly demonstrated proficiency and competency in a recurrent instrument proficiency check, additional repeated recurrent training does little to broaden the skills of a pilot to mitigate the largest lethal threat to all segments of fixed wing aviation; Loss of Control In-Flight (LOC-I). While the Administrator has taken aggressive steps to mitigate the threat for Part 121 passenger safety pilots and operators, no equivalent level of safety is readily apparent for Part 135 passenger safety, pilots and operators. This exemption, if granted, establishes systematic training outcomes that meet or exceed all known international standards for UPRT. It contains explicit proficiency objectives that allow the pilot to anticipate, mitigate and if necessary, to recover from a potential or developed LOC-I event.

1.7 Additional Rationale. FAA Order 8900.1, Volume 3, Chapter 19, Training Programs and Airman Qualifications, D., encourages operator innovation when developing training methods and techniques, presumably to mitigate serious threats to aviation safety.

2.0 Petitioner

2.1 Thrive Aviation 1410 Jet Stream Drive Suite 202, Henderson, NV 89052

2.2 Thrive Aviation, Air Carrier Certificate Number KBAA473F, is an on demand common carriage carrier operating pursuant to 14CFR119.21(a)(5).

3.0 14 CFR Sections for Exemption

3.1 Pursuant to 14 CFR Part 11, the petitioner seeks to complement and enhance the training effectiveness addressed by §§ 135.297(a); (b); (c); (d);(e); (f); (g); 135.293 and 135.351 through the incorporation of integrated UPRT at recurrent intervals.

3.2 §§ 135.297 addresses pilot in command instrument proficiency check requirements. 3.3 §§ 135.293 addresses recurrent pilot training requirements.

3.4 §§ 135.351 addresses recurrent training.

4.0 Extent of Relief and Rationale

4.1 The relief specified above in Section 3.0 is sought once every two (2) years for pilots who have at least two (2) consecutive years of service operating under Part 135 operations on the same aircraft type. The evaluations are to be substituted once every 24 months (notwithstanding the grace provisions outlined herein) with an integrated curriculum (see Attachment A) consisting of an airborne UPRT platform, computer-based training, and classroom UPRT academics, as described in this petition. The substitute UPRT course shall abide by the grace provisions of §§ 135.301, 135.343, 135.323 (b).

Thrive Aviation: Petition for Exemption

This exemption allows highly experienced pilots meeting eligibility requirements to go 12 months without an instrument proficiency check and aircraft recurrent training.

4.2 Rationale for Petition for Exemption

4.2.1 This exemption comprehensively mitigates Loss of Control In-flight

(LOC-I)--the largest fatal accident threat in aviation (See Figures 10.1 and 10.2)--by significantly expanding the pilot's knowledge and skills to recognize, prevent, and recover from airplane upsets, the precursor flight condition to all LOC-I events.

4.2.2 The critical importance of the role of an airborne UPRT Platform cannot be overstated. Section 3.3.1 of the ICAO Manual on Airplane Upset Prevention and Recovery Training (ICAO UPRT Manual, Doc 10011), comprehensively captures the rationale relevant to this petition:

4.2.2.1 While an essential component of overall flight training and UPRT, current simulators have limitations that render them incapable of providing the complete exposure to conditions synonymous with preventing or recovering from a LOC-I event. Limitations in simulator motion cueing and the reduced emotional response create boundaries that prevent pilots from experiencing the full range of airplane attitudes, load factors and behavior that can be present during an actual flight. These areas of missing experience provide gaps in pilots' understanding and proficiency when confronted with an actual upset. UPRT on airplanes provided by competent instructors should compensate these gaps by being part of the initial UPRT experience at the CPL(A) and MPL level and should then be supplemented by training in simulators. This on-airplane training, when given at the CPL(A) or MPL licensing level, provides physiological and psychological exposure geared toward upset prevention and recovery which creates a frame of reference that can be transferred to the simulator environment later in their training. The practice and application of skills acquired during on-airplane UPRT provides experience and confidence that cannot be fully acquired in the simulated environment alone. Although not specifically addressed, when the two platforms are combined, the depth of coverage of the on-airplane UPRT elements listed in Table 3-1 can in some instances be enhanced by the integrated use of a suitable simulator to complement the training exercises conducted on the airplane. For that reason, ATOs are encouraged to deliver the on-airplane phase of their UPRT programs for CPL(A) and MPL trainees utilizing appropriate ground-based simulation whenever possible to optimize the exposure of the trainees to the upset phenomena.

(ICAO, 2014, p. 3-4).

Thrive Aviation: Petition for Exemption

4.2.3 Although some of the simulator limitations mentioned above are addressed by the new Extended Envelope Training required of Part 121 air carriers, there is no equivalent mitigation for Part 135 operators utilizing aircraft without

appropriately modified simulators.

4.2.4 Any pilot that participates in the training specified with this exemption will develop lasting, transferable, industry-compliant advanced handling skills in all attitudes and in a diversity of slow flight, approach to stall, and stalled flight conditions. This immersion into the all-attitude, all-envelope environment is

essential to developing the necessary skills, awareness, and discipline necessary for pilots to comprehensively manage startle and surprise and thereby reduce the risk of the LOC-I threat.

4.2.5 The primary reason for this petition is to increase Part 135 operational safety. Section 6.0 Increased Level of Safety details rationale on how this will be accomplished.

4.3 Pilot Eligibility Requirements are described in section 1.0.

4.4 Training Provider Eligibility Requirements

4.4.1 The UPRT training provider shall:

4.4.1.1 Be a Part 141 Flight School with UPRT Instructors and Evaluators qualified as specified in this petition: UPRT Instructor/Evaluator Qualifications and Experience, and

4.4.1.2 Be compliant with an industry accepted Safety Management System such as that defined by the International Standard for Business Aviation Operations (IS-BAO) and as recommended by ICAO doc 10011 and accepted industry best practices, and

4.4.1.3 Deliver UPRT in accordance with a formalized program approved by AFS-280 for compliance to ICAO doc 10011, AC 120-111, AC 120-109A, and the Airplane Upset Recovery Training Aid - Revision 2. The UPRT program shall comply with the following minimum requirements:

4.4.1.3.1 Program shall train to proficiency the knowledge and skill objectives, using the specifications as described in Section

4.4.1.3.2 The airborne UPRT Training Platform flight instruction shall be conducted in an aerobatic capable airplane that meets the minimum requirements of Section 4.7 airborne UPRT Program: Airborne Platform Requirements in this exemption.

4.4.1.3.3 Petitioner references ICAO doc 10011 as it will provide the highest margin of safety in the delivery of UPRT. Petitioner reserves the right to use any provider that AFS 280 may approve of that meets the knowledge and skill standards described in ICAO doc 10011. 4.5 UPRT Proficiency Objectives and Training Specifications in this exemption.

Thrive Aviation: Petition for Exemption

4.5 Thrive Pilot UPRT Completion Competencies: Knowledge

4.5.1 Thrive Pilots shall be able to apply:

4.5.1.1 The academic elements of the Airplane Upset Recovery Training Aid - Revision 2, and

4.5.1.2 The relevant causal factors of LOC-I accidents in similar aircraft types and operational environments to pilot in training aircraft type and operational environment, and

4.5.1.3 Anticipate the conditions under which upsets have occurred, and are likely to occur, and

4.5.1.4 Apply Upset Prevention and if necessary, recovery control and performance implications of:

4.5.1.4.1 Aerodynamics of swept wings, including high alpha and high Mach characteristics (topics to include stall

characteristics, “coffin corner,” Mach tuck, compressibility, etc.), and

4.5.1.4.2 Jet engine characteristics and engine mounting locations vis-à-vis aircraft center of gravity, and

4.5.1.4.3 Design specifics of operator’s aircraft such as:

4.5.1.4.3.1 Spoiler/speedbrake type and effects, and

4.5.1.4.3.2 Stabilizer trim type and effects, and

4.5.1.4.3.3 High altitude operations, and

4.5.1.5 Prevention, recognition, and recovery control strategies for upset scenarios, and

4.5.1.6 The lesson plans for the airborne UPRT Training Platform missions, including instructor/trainee duties and responsibilities,

safety considerations, learning objectives, maneuver setups, and performance expectations.

4.5.2 Delivery Medium: Instructor-led classroom, supplemented by home study material as needed.

4.5.3 Planned hours: Sufficient for thorough coverage of subject matter; budgeting 8 hrs.

4.5.4 Validation method:

4.5.4.1 Train to proficiency. Adequate knowledge and understanding shall be demonstrated by the trainee to the satisfaction of the instructor through instructor-trainee interaction, and

4.5.4.2 A written examination, with a minimum pass rate of 80%, and corrected by the instructor to 100%.

4.6 Successful Completion Competencies: Skills

Thrive Aviation: Petition for Exemption

- 4.6.1 Thrive Pilots shall be able to reliably and repeatedly be able to perform:
 - 4.6.1.1 Recognition, prevention and recovery from, airplane upset conditions, entered via realistic scenarios, to include:
 - 4.6.1.2 Stalled flight, to include:
 - 4.6.1.2.1 Accelerated stalls, and
 - 4.6.1.2.2 Slipping turn stalls, and
 - 4.6.1.2.3 Skidded turn stalls, and
 - 4.6.1.2.4 Stalled flight, nose-low, and
 - 4.6.1.2.5 High altitude stalls.
 - 4.6.1.3 Unusual attitudes, to include:
 - 4.6.1.3.1 Nose-high wings level (> 40° pitch, <15° bank), and
 - 4.6.1.3.2 Nose-high high-bank (> 40° pitch, <60° bank), and
 - 4.6.1.3.3 Spiral dives, and
 - 4.6.1.3.4 Nose-low, wings level (<15° bank), and
 - 4.6.1.3.5 Nose-low, low-bank (<60° bank), and
 - 4.6.1.3.6 Nose-low, high bank (>120° bank).
 - 4.6.1.4 Incipient spins.
 - 4.6.1.5 Alternate control strategies (pitch, roll, and yaw).
 - 4.6.2 Maneuver in normal, slow, stalled, and all-attitude flight while:
 - 4.6.2.1 Maintaining situational awareness of the aircraft's orientation in three dimensions, and
 - 4.6.2.2 Managing surprise and startle during an upset while performing an effective recovery back to normal stabilized flight, and
 - 4.6.2.3 Respecting the airplane load limitations without reference to a G meter, and
 - 4.6.2.4 Avoiding loaded roll inputs greater than 1.5 G or less than 0.1 G, and
 - 4.6.2.5 Managing rudder inputs in a manner that is positively transferable to transport category airplane upset handling and normal operations, and
 - 4.6.2.6 Applying effective Threat and Error Management throughout the recognition, prevention, and recovery portions of all upset scenarios.
 - 4.6.3 Delivery Medium: Airborne UPRT training platform.
 - 4.6.4 Planned hours: Sufficient for thorough coverage of subject matter; 4 Airborne UPRT Training Platform sorties, approximately. 3.5 hrs. total time in maneuvering airspace.
 - 4.6.5 Validation method: Train to proficiency. Adequate skill shall be demonstrated by the trainee to the satisfaction of the instructor by the trainee's performance in flight.
- 4.7 Airborne UPRT Training Platform: Requirements

Thrive Aviation: Petition for Exemption

- 4.7.1 The platform used for the airborne UPRT Training Platform portion of the UPRT program shall be equipped with:
- 4.7.1.1 An attitude indicator in the student's cockpit or seating position able to accurately depict flight attitudes in all required training program maneuvers, and
 - 4.7.1.2 A video camera able to record all audio communications and video tape the training from a vantage point that represents the attitude of the airplane in relationship to the horizon, and
 - 4.7.1.3 Parachutes for both occupants in compliance with FAR 91.307, and
 - 4.7.1.4 A g-meter at the instructor station,
 - 4.7.1.5 Access for the expeditious exit by both occupants for ground egress and airborne bailout, and
 - 4.7.1.6 A traffic information system that visually displays traffic aircraft position, altitude, and trends to the Pilot in Command to include audio proximity warning, with a minimum of traffic audio proximity warnings for the student.
- 4.7.2 Be approved by the Administrator for:
- 4.7.2.1 Maneuvering in all 180 degrees of left and right bank orientations, and in all 90 degrees of nose up and nose down pitch orientations,
 - 4.7.2.2 Intentional spins, and
 - 4.7.2.3 Maneuvering loads to a minimum of +5 G and -2G.

5.0 Public Benefit

5.1 Increased Level of Public Safety for Part 135 Air Travel:

5.1.1 Level of safety is increased beyond current regulatory requirements: As presented in AC 120-111, Section 1-2., the implementation of UPRT was deemed so important to public safety that all US Part 121 air carriers are required to UPRT by March 2019. Section 6.0 Increase Level of Safety cites numerous industry references and recommendations from organizations such as the NTSB, FAA, ICAO, and IATA, further emphasizing the major benefit to public safety through UPRT as described in this petition.

5.1.2 Ability for Part 135 operators to comply with AC 120-109A, improved stall training, to include full stall training, is essential to public safety. Unfortunately, Part 60 simulator improvements to extend simulator aero models to address the full stall to even a basic level are not required for Part 135 pilot training. This exemption fully addresses full stall training using purpose-built airborne UPRT training platforms, well beyond the human factors capability of FAR 121.423 Extended Envelope Training for Part 121 Air Carriers.

5.1.3 In support of the above, and as evidenced by Figure 10.1: On Demand Part 135 Fatalities and Fatal Accidents by Occurrence Category 2008-2016, LOC-I is the largest threat to public safety in Part 135 flight operations.

5.2 Good Cause Exists to Issue the Exemption without Notice and Comment

5.2.1 The petitioner requests that the FAA issue the exemption without publication for notice and comment in the Federal Register as is normally required.

5.2.2 14 CFR Section 11.87 lists four factors that the agency considers in deciding whether a petitioner has shown good cause for the FAA to not publish a summary of the petition for exemption and request comments. Specifically, addressed below in italics are those factors along with the company's response in plain text and why there should be no delay approval of the petition:

5.2.2.1 Whether granting the petition would set a precedent:

5.2.2.1.1 A check of the FAA's automated exemption database revealed no exemptions relating to these sections were issued from 2000 to the present were granted. Given the unique nature of the highly specialized training provider requirements necessary to deliver the stated UPRT program effectively, it is unlikely there would be widespread public use for the delivery of the training specified by this exemption.

5.2.2.2 Whether delaying action would adversely affect the operators benefiting from this exemption:

5.2.2.2.1 As detailed in Section 6.0 Increased Level of Safety, this exemption does not introduce training solutions that have not already been extensively documented and recommended by the FAA, NTSB, EASA, ICAO, NBAA, and numerous international safety organizations. All training conducted as a result of this petition will be delivered in compliance with all guidance issued by the FAA (to include AC 120-109A and AC 120-111) and internationally recognized best practices as published in the ICAO UPRT Manual, Doc 10011. Therefore, the comment period would simply delay the operator's opportunity to gain the safety benefits of countering LOC-I, the leading threat to air safety in Part 135 operations.

5.2.2.3 Whether the petition was filed in a timely manner:

5.2.2.3.1 This petition has been filed in response to numerous recommendations made on the behalf of the FAA Loss of Control Avoidance and Recovery Training (LOCART) Aviation Rulemaking Committee (ARC), ICAO, NTSB, IATA and other leading industry organizations. The exemption request goes beyond existing training requirements in a proactive manner to achieve a higher standard of safety than called for in existing regulations.

5.2.3 The petitioner submits that good cause exists not to delay action on this request. The petitioner estimates that a hundred or more operators, with thousands of pilots, will want to follow Thrive's leadership. The capacity to do this training is very limited.

6.0 Increased Level of Safety

6.1 The exemption would not adversely affect safety and would improve the level of safety from the existing rule as follows:

6.1.1 Increased Pilot Skill and Knowledge: As specified in Section 4.3 Pilot Eligibility Requirements, participating pilots are highly experienced, current, and proficient in their Part 135 airplane type as detailed in Section 4.0, the training afforded by this exemption provides pilots with comprehensive skills and knowledge compliant with UPRT industry best practices.

6.1.2 Moreover, the UPRT program delivers relevant and evidence-based safety training well beyond licensing training to significantly reduce the risk of Loss of Control In-flight, the leading cause of fatalities in On Demand Part 135 operations (See Figure 10.1: On Demand Part 135 Fatalities and Fatal Accidents by Occurrence Category 2008-2016).

6.2 Instrument Proficiency: In addition to increasing general piloting capabilities, the UPRT training includes instrument recovery training that further enhances the pilot's awareness, understanding, and proficiency in instrument-only airplane handling both within and outside the normal operating envelope. While instrument currency may help to reduce LOC-I accidents peripherally through control retention, it does nothing to address recoveries from beyond the normal envelope, explain the background academics behind LOC-I, expose pilots to the actual human factors involved in an airplane upset event, or develop the mental modeling and pattern recognition crucial to prevention or escalation of an undesired aircraft state or unanticipated airplane upset.

6.3 Industry References Supporting the Operational Safety Importance of UPRT: 6.3.1 The following references cite UPRT as being essential safety training for all commercial pilots and/or the requirement to address the risk of LOC-I as a top safety focus area.

6.3.1.1 AC 120-109A Stall Prevention and Recovery Training: Section 1-4. a. reflects the importance, in both training value and safety as represented by this exemption when it states that "airplanes used for flight training elements should be those designed for the specific maneuvers being conducted, and training programs should use instructors specifically qualified to conduct stall training in airplanes." In Section 2-1. a., the AC's correct and repetitive emphasis is given to awareness and prevention in UPRT to assure that "effective stall training curriculum should provide pilots the knowledge and skills to avoid undesired aircraft states that increase the risk of encountering a stall event or, if not avoided, to respond correctly and promptly to a stall event." As will be required by all Part 121 air carriers through FAR 121.423 Extended Envelope Training in 2019, the FAA definitively states in AC 120-109A

Section 5-2. that "full stall training provides pilots with the hands-on experience of the airplane handling characteristics and cues (e.g., increased buffet, reduced stability and control, and roll off) near and at full stall... If an aircraft exhibits more than one of the ways a full stall is defined, these conditions should be trained."

Thrive Aviation: Petition for Exemption

Training in 2019, the FAA definitively states in AC 120-109A Section 5-2. that “full stall training provides pilots with the hands-on experience of the airplane handling characteristics and cues (e.g., increased buffet, reduced stability and control, and roll off) near and at full stall... If an aircraft exhibits more than one of the ways a full stall is defined, these conditions should be trained.” Most, perhaps all, Part 135 operators will not have access to extended envelope simulators thereby necessitating full stalls to be trained in actual aircraft specifically designed to conduct the maneuver safely. Such training should be provided under the guidance of expert UPRT instructors in the real-world environment, a regime far superior for full stall training than even today’s most advanced extended envelope simulators. Appendix 5 confirms that “previously qualified FFSs may not be capable of conducting training tasks to a full stall.”

6.3.1.2 AC 120-111 Upset Prevention and Recovery Training: The FAA encourages “all airplane operators, pilot schools, and training centers to implement UPRT and to use this guidance, as applicable to the type of airplane in which training is conducted.” Section 2-3 emphasizes the important role of the instructor in safe, effective UPRT to avert the dire consequences of providing misleading information. Section 2-5. e. (2) continues that UPRT instructors should be trained on, and fully understand, the importance of energy management factors on all phases of flight, including UPRT”.

6.3.1.3 AC 61-138 Airline Transport Pilot Certification Training Program (ATP CTP): Through this Advisory Circular, the FAA has given sufficient importance to stall and upset training such that 30-hour academic and 10-hour simulator requirement topics are mandatory prior to an ATP being issued. Pilots operating in Part 135 today that did not receive this training may receive it through this exemption. Pilots who successfully completed the ATP CTP will benefit from getting dedicated on-aircraft UPRT where essential human factors training is provided which exceeds the requirements of the ATP CTP. Section 12. a. (3) clarifies the importance of understanding the factors leading to an airplane upset, skill development in upset prevention and recovery techniques, and the application of these principles in commercial airplanes. Section 15. c. (2) requires practical training in high-altitude operations, stall and upset prevention and recovery for a minimum of 3 hours. Of great importance for commercial Part 135 operators, Section 15. c. (2) (b) 1. (ii) requires that UPRT should include scenarios where visual references (outside) are not available” as is specified in this petition for exemption, thus further expanding the instrument flying skills of participating pilots.

6.3.1.4 AC 61-138 Airline Transport Pilot Certification Training Program (ATP CTP): Through this Advisory Circular, the FAA has given sufficient importance to stall and upset training such that 30-hour academic and 10-hour simulator requirement topics are mandatory prior to an ATP being issued. Pilots operating in Part 135 today not receive this training may receive it through this exemption. Pilots who successfully completed the ATP CTP will benefit from getting dedicated on-aircraft UPRT where essential human factors training is provided which exceeds the requirements of the ATP CTP. Section 12. a. (3) clarifies the importance of understanding the factors leading to an airplane upset, skill development in upset prevention and recovery techniques, and the application of these principles in commercial airplanes. Section 15. c. (2) requires practical training in high-altitude operations, stall and upset prevention and recovery for a minimum of 3 hours. Of great importance for commercial Part 135 operators, Section 15. c. (2) (b) 1. (ii) requires that UPRT should include scenarios where visual references (outside) are not available” as is specified in this petition for exemption, thus further expanding the instrument flying skills of participating pilots.

6.3.1.5 Pilot’s Handbook of Aeronautical Knowledge (PHAK): On page 2-21 in the section on Decision-Making in a Dynamic Environment, the PHAK states, “in an emergency situation, a pilot might not survive if he or she rigorously applies analytical models to every decision made as there is not enough time to go through all the options. For the past several decades, research into how people actually make decisions has revealed that, when pressed for time, experts faced with a task loaded with uncertainty first assess whether the situation strikes them as familiar. Experts appear to make provisional sense of a situation, without actually reaching a decision, by launching experience-based actions that in turn trigger creative revisions. This is a reflexive type of decision-making anchored in training and experience and is most often used in time of emergencies when there is no time to practice analytical decision-making.” An aircraft upset is a time-critical, life-threatening event requiring the same “reflexive type of decision-making anchored in training and experience.” Good UPRT training specifically addresses decision making in a dynamic environment that most pilots have never experienced. Experiencing this environment is critical in training as it is precisely the aircraft regime where many of the fatal LOC-I events happen. The training outlined in this exemption addresses this gap, and adequately prepares pilots in these regimes of training before they experience it for the first time in the operational environment.

Thrive Aviation: Petition for Exemption

6.3.1.6 InFO 10010: Enhanced Upset Recovery Training: This InFO states, “the category of loss of control (LOC) continues to outpace other factors as the leading cause of fatal accidents in the last 20 years.” It continues, that directors of operations, directors of safety, chief pilots, training managers and training centers should consider incorporating material in this training aid [Airplane Upset Recovery Training Aid - Revision 2] as the suggested actions provide an excellent framework for effective UPRT. 6.3.1.7 FAA’s Loss of Control Avoidance and Recovery Training (LOCART) Aviation Rulemaking Committee (ARC) Final Report Recommendations (ICAO, 2014, p. 1-2): The LOCART initiative resulted in far-reaching recommendations for improvements to existing training practices to substantially improve current safety practices and recurrent training through integrated UPRT. The LOCART ARC recommendations state that UPRT must “provide comprehensive academic training that covers the broad spectrum of issues surrounding airplane upsets ... continued throughout the professional career at scheduled recurrent training intervals”, as specified in this petition. Furthermore, the LOCART ARC recommended that operators “provide UPRT-specific training in actual flight at the commercial pilot license ... on light airplanes which are capable of performing the recommended maneuvers whilst maintaining acceptable margins of safety.” As required by this exemption request, LOCART experts state additional UPRT should be “conducted in non-type-specific flight simulation training devices.”

6.3.1.8 AC 120-111 Sections 1.5 b. invites part 121 air carriers to submit a request to the Administrator for approval of a deviation from the FFS requirements using an alternative method to meet required learning objectives. Although no such invitation has been extended to part 135 operators, a consistent approach would be open to a similar remedy for operators under part 135.

6.3.1.9 Under Section 1.5 c. of AC 120-111 it states that although training is designed to be conducted in a simulator, it opens the opportunity to conduct training using airplanes, incorporating the academic elements. It states that operators should carefully select flight training maneuvers and employ risk mitigation strategies, which is accomplished using aircraft certified in the aerobatic category, and designed for the specific maneuvers being conducted. It states that training programs should use instructors specifically qualified to conduct UPRT in airplanes, as this request for exemption requires.

Thrive Aviation: Petition for Exemption

In the same section, the FAA recommends that any operator conducting UPRT in airplanes follow the guidance and associated risk mitigation strategies contained in ICAO's Doc 10011, Manual on Airplane Upset Prevention and Recovery Training, as is required by UPRT providers allowed under this petition.

6.3.1.10 National Transportation Safety Board (NTSB): The training in this exemption satisfies all the following NTSB recommendations for training:

6.3.1.10.1 The NTSB has correctly identified LOC-I in its 2017-2018 Most Wanted List representing the NTSB's advocacy priorities. The Most Wanted List is specifically designed to increase awareness of the most critical changes needed to reduce transportation accidents and save lives. (NTSB, n.d.)

6.3.1.10.2 Recommendation A-96-120: Require 14 CFR Part 121 and 135 operators to provide training to flight crews in the recognition of and recovery from unusual attitudes and upset maneuvers, including upsets that occur while the aircraft is being controlled by automatic flight control systems, and unusual attitudes that result from flight control malfunctions and uncommanded flight control surface movements.

6.3.1.10.3 Recommendation A-04-62; Along with developing the guidance recommended in Safety Recommendation A-04-61, evaluate issues concerning the level of automation appropriate to teaching upset training and develop and disseminate guidance that will promote standardization and minimize the danger of inappropriate simulator training.

6.3.1.11 ICAO Manual Doc 10011, 2014, Manual on Airplane Upset Prevention and Recovery Training: Section 1.2.5 references research that concludes the ability of crew to return the aircraft to a safe state was primarily a result of the crew's accurate analysis to the situation and/or their ability to apply effective recovery techniques. The ICAO UPRT Manual, Section 3.3.1.4 explains that on-aircraft UPRT must be delivered by current, proficient, UPRT-qualified instructors. Section 3.3.1.3 emphasizes the critical importance of addressing human factors to increase the crew's ability to deal with sudden upset or unexpected flight path divergence, best achieved in on-aircraft UPRT.

6.3.1.12 Amendment No. 3 to the Procedure for Air Navigation Services (PANS) Training, ICAO Doc 9868, (April 2014): Section 7.2.2 clarifies those studies by industry-wide investigative bodies, operators, and airplane manufacturers, reveal that crews involved in LOC-I accidents reacted inappropriately highlighting the

Confidential: Thrive Aviation Petition for Exemption Page 14 / 24 January 17, 2022

Thrive Aviation: Petition for Exemption

importance of upset training as the primary countermeasure. Section 7.3.1 emphasizes that a well-constructed UPRT program will allow crews to effectively deal with unexpected upset events, a skill deficient in virtually every recorded LOC-I accident. Section 7.5.7 states the importance of on-aircraft UPRT to bring experience

to pilots that exceeds normal operations, to reduce unpredictable responses. This experience can be introduced and managed through an expert UPRT instructor using building block processes to develop a pilot's complete knowledge and understanding of the UPRT environment.

6.3.1.13 National Business Aviation Association Safety Committee (NBAA SC): In 2017, the NBAA Safety Committee (whose membership includes a large proportion of On Demand Part 135 operators) have made the mitigation of LOC-I on one of their top safety focus areas for the third year in a row, stating "Loss of control inflight is by far the largest cause of fatal incidents in business aviation. The Safety Committee has taken steps to gather, align and develop resources to provide NBAA's membership with comprehensive guidance to help reduce the risk of LOC-I." The 2016 NBAA Safety Resource: Loss of Control Inflight publication emphasizes the NBAA's adoption of a multi-faceted approach to include awareness, prevention, and recovery to yield the best training results. (NBAA, 2016)

6.3.1.14 International Air Transport Association (IATA) Guidance Material and Best Practices for the Implementation of Upset Prevention and Recovery Training, June 2015: In Section 4 concerning upset training program development, it states, "the ideal UPRT program structure should therefore be designed as a coordinated effort between the operator and the ATO (Approved Training Organization). It should include consistent on-airplane and non-type-specific UPRT of the ATO, and type-specific UPRT of the operator. The overarching aim of UPRT is to develop flight crew resilience (competence and confidence) in prevention and recovery from undesired aircraft states, including upsets." To obtain the most effective safety results, a comprehensive and integrated training approach to UPRT training has been identified and implemented, as specified in this exemption. The petitioner has specified training providers using this methodology. In Section 6 on Practical Training, "upset prevention and recovery is not an isolated art, it should be embedded in today's safety concepts." UPRT is an essential part of a comprehensive safety program to mitigate demonstrated threats. This exemption will institutionalize the training required to substantially reduce the risk of LOC-I challenges currently being experienced.

Thrive Aviation: Petition for Exemption

6.4 In summary, there is no question that UPRT provided as recommended and required by the above references--just as will be provided through this exemption--substantially increases the level of safety of the participating operator compared to participating in yet another typical recurrent training session which has been attended multiple times prior to the enhanced training being advocated.

The petitioner is requesting an alteration of §§ 14 CFR Part 135.297 to allow for the check to be a demonstration of recovery from an unanticipated upset event using instrument references only, while in actual flight. Satisfactory completion will be recoveries made correctly utilizing the stall recovery template found in AC 120-109A, and the nose low and nose high recovery templates found in AC 120-111.

The existing unaltered 135.297 is within the normal operating envelope of an aircraft and provides for instrument recovery skills within the normal envelope. The petitioner is asking for an alteration of 135.297 which provides for a checking of instrument proficiency in an expanded envelope including inverted flight.

FAA Order 8900.1 (CHG 316, VOLUME 3, CHAPTER 19, Section 10, 3-1337, B., 4,) encourages frequent revision of recurrent training programs with current and timely material. The basis of existing required training addresses control of the aircraft within the normal operating envelope. The training and checking proposed centers on operations required to prevent the departure of the aircraft from its normal operating envelope and return the aircraft to its normal operating envelope, if required. Fostering prevention is accomplished by allowing pilots in training to see multiple pathways into upset situations. In addition to allowing the practice of safe and effective techniques for recovery, this methodology provides mental modelling creating enhanced ability in pattern recognition of impending or escalating upset events. This reduces the time required for recognition and confirmation, reduces surprise and startle, and thereby maximizes the opportunity for prevention prior to a requirement for recovery. This provides pilots with a greatly expanded skillset beyond existing recurrent training.

6.5 Simulator Limitations in the UPRT Domain: The current method of compliance utilized for 14CFR Part 135 Operators must occur through an approved Part 142 Training Center or in the Operator's aircraft with a FAA Aviation Safety Inspector or Company Check Airman conducting the evaluation. For typical training and evaluation requirements, the simulator option is preferred over the aircraft event due to the inability of certain maneuvers to be conducted in the aircraft based upon Flight Manual Limitations, such as the conduct of approach to stall training rather than training to a full aerodynamic stall. However, the simulator has major limitations when addressing critical training elements of UPRT, such as human factors, that have a major impact on a pilot's ability to effectively deal with a real-world airplane upset crisis. The primary deficiencies associated with simulator UPRT are as follows:

Thrive Aviation: Petition for Exemption

6.5.1 Startle and Surprise Fidelity: While Simulator evaluations provide a greater opportunity to allow situations to be carried out to their “logical conclusion” based upon airman performance, they are not a ‘surprise’ to the airman, nor do they truly startle the crew. In addition, attempts to develop surprise and startle events in simulators, such as extreme and often-unrealistic windshear events to force a full stall event, are riddled with negative training elements that can substantially reduce, or eliminate, the value of the startle/surprise response generated.

6.5.2 Motion Cueing Inaccuracies: Simulators do not provide accurate motion cueing of sufficient duration to adequately address necessary physiological training cues.

AC 120-109A, Section 2-5. a. (3) emphasizes that simulator motion cueing does not always “accurately simulate the associated forces and rates that could be felt in an airplane.” Simulators cannot effectively present the following motion characteristics essential to UPRT training:

6.5.3 Sustained pitch, roll, and yaw motion and accelerations,

6.5.4 The instantaneous and sustained g loading, up to limit loads (positive and negative) possible and beyond, that are encountered and necessary in an airplane upset and the resulting recovery,

6.5.5 Sustained unloaded flight conditions at approximately 0.25 to 0.50 G that is essential to effective UPRT.

6.5.6 Accurate representation of aircraft behavior in the region of reverse command. 6.5.7

Reality Factor: No matter how high the fidelity the simulator can portray of the environment, cockpit, airplane performance, visuals, audio sensations, and all

other factors, the pilot in training knows they are on the ground and never in real danger.

Although an airborne UPRT Platform, never puts them at unacceptable

risk, the entire psyche of pilot changes when performing UPRT in the real world, with the real ground coming at them, with correct motion cueing, mild to

significant spatial disorientation and correct and sustained G loading.

6.6 Evidenced-Based Training: Pilots who have taken numerous check rides understand the maneuvers to be evaluated and in many cases the sequence of tasks to be completed during the evaluation. Further repetition of recurrent check rides after meeting the requirements of Section 4.3 Pilot Eligibility Requirements, do not offer near the safety value of UPRT as described in this petition. In addition to increased ability to mitigate the occurrence of potential airplane upset events, participants of this training testify to gaining increased manual handling skills, improved flight envelope and energy state awareness, and enhanced airmanship.

7.0 UPRT Instructor and Evaluator Requirements

7.1 In accordance with, and in addition to, the language in number 1 and 3 above, the petitioner shall supply training records to the UPRT supplier (APS) that demonstrates the pilots’ eligibility for the UPRT segment. These records along with the UPRT training records and completion certificate will reside in the airman’s training folders at the petitioner’s offices.

Thrive Aviation}: Petition for Exemption

7.2 The petitioner shall establish new requirements in its compliance management system so that no pilot goes more than 12 months, with grace provisions, without complying to 14 CFR Part 135.297, on make, model and series, and no more than 6 months, with grace provisions, for a 135.297 check without a UPRT completion certificate.

7.3 UPRT, given the unique nature of the training operations, must be conducted by evaluators and instructors who have demonstrated proficiency in this unique area of operations. ICAO Doc. 10011, section 5.2.2.1, which is based in large part on the FAA's LOCART work, suggest that the UPRT instructor must be uniquely qualified in order to provide the pilot in training the appropriate degree of exposure while simultaneously respecting airplane limitations and capabilities. The instructors that will be utilized in the program contemplated by this petition for exemption shall meet the requirements of ICAO Doc. 10011, Section 5, as well as the evaluator and instructor requirements described herein.

7.4 UPRT shall only be conducted by Instructors and Evaluators qualified and current as specified in this section. Instructors are qualified by UPRT aircraft platform. Instructors may simultaneously hold qualification in any one of, or any combination of, platforms. All instructors are required to be qualified for delivery of academic course presentations regardless of type of instructional aircraft platform.

7.5 Evaluators are experienced instructors who meet higher baseline requirements. Evaluators hold the responsibility and authority to determine if each instructor meets the qualification requirements, and to ensure standardization of the conduct of the UPRT program.

7.5.1 Qualification Requirements – General - Instructor Qualifications include both minimum baseline experience requirements and proficiency objectives in each of three areas: All-Attitude Flying, Flight Instruction, and Multi-crew, Multiengine flight operations. The rationale for each is described below.

7.5.1.1 All-Attitude/All-Envelope Flight Operations

7.5.1.2 Rationale: The key to effective UPRT is the instructor. The safety implications and consequences of applying poor instructional technique, or providing misleading information, are more significant in UPRT compared with some other areas of pilot training. Therefore, an essential component in the effective delivery of UPRT is a properly trained and qualified instructor who possesses sound academic and operational knowledge. (AC 120-111, Upset Prevention and Recovery Training, Section 2-3. Importance of the UPRT Instructor)

7.5.1.3 As stated in both ICAO Doc 10011, Section 5.2.2.1 and ICAO PANS-TNG DOC 9868, Section 7.5.7: "The UPRT on-airplane environment may be beyond that which is experienced during normal training operations. The unpredictable nature of trainee inputs, reactions, and behavior requires fluency in response to a wide variety of potential situations requiring a time-constrained and accurate response. This specialized expertise cannot be acquired through routine flight operations alone but demands that instructor training provides the appropriate degree of exposure necessary to develop a comprehensive understanding of the entire UPRT operating environment."

Thrive Aviation: Petition for Exemption

7.5.1.4 The IP must be capable of “recovering the airplane in those instances when corrections are required which could exceed the capabilities of the trainee” (ICAO Doc 10011, Section 5.2.2.2,d)

7.5.1.5 The IP must be capable of “foreseeing the development of flight conditions which might exceed airplane limitations and acting swiftly and appropriately to preserve necessary margins of safety” (ICAO Doc10011, Section 5.2.2.2, e)

7.5.1.6 The IP must be capable of “projecting the airplane’s flight path and energy state based on present conditions with consideration to both current and anticipated flight control inputs (ICAO Doc 10011, Section 5.2.2.2, f)

7.6 Flight Instruction

7.6.1 Title 14 CFR 14 Part 61.193 outlines Flight instructor privileges. It states that a person who holds a flight instructor certificate is authorized within the limitations of that person's flight instructor certificate and ratings to train and issue

endorsements that are required for a wide variety of certificates and ratings.

Equivalent safety demands equivalent requirements for the UPRT instructor as are applied to the delivery of other areas of flight instruction.

7.6.2 “On-airplane [Airborne UPRT Platform] instructors shall meet the requirements as specified in those sections of Annex 1 entitled Circumstances in which authorization to conduct instruction is required or Flight instructor rating appropriate to airplanes” (ICAO Doc 10011, Section 5.2.2.2).

7.6.3 The IP must be able to “accurately deliver the training curriculum employing sound instructional techniques” (ICAO Doc 10011, Section 5.2.2.2,a).

7.6.4 The IP must be capable of “understanding the importance of adhering to the UPRT scenarios that have been validated by the training program developer during the lesson” (ICAO Doc 10011, Section 5.2.2.2,b).

7.6.5 The IP must be capable of “accurately assessing trainee’s performance levels and providing effective remediation” (ICAO Doc 10011, Section 5.2.2.2,c).

7.7 Multi-Crew, Multi-Engine Flight Operations

7.7.1 The handling characteristics, control response, and mass involved in a civil general aviation, commuter, and transport category aircraft may differ from aerobatic category aircraft. Familiarity with these differences helps the instructor to understand what is, and is not, transferable.

7.7.2 Multi-Crew flight decks require the establishment and maintenance of teamwork and shared mental model of the aircraft state and plans between crewmembers.

Communications skills are critical, especially in managing a surprise event such as an upset. Experience in the crew environment enables the instructor to convey the crew-based techniques necessary to successfully manage upset prevention, recognition, and recovery as a team.

7.8 Qualification Requirements – Specifics:

Confidential: Thrive Aviation Petition for Exemption Page 19 / 24 January 17,2022

Thrive Aviation: Petition for Exemption

7.8.1 Baseline Experience – Instructors

7.8.2 All-Attitude/All-Envelope Maneuvering:

7.8.3 Have, or have had, at least one of the following:

7.8.3.1 Military fighter, attack, or all-attitude capable trainer aircraft qualification

7.8.3.2 Civilian Aerobatic qualification, evidenced by either

7.8.3.2.1 Hold of an IAC achievement award in the powered category at the Intermediate level or higher, or

7.8.3.2.2 Hold of an FAA 8710-7, Statement of Aerobatic Competency, for Aerobatics.

7.8.4 Flight Instruction:

7.8.4.1 Hold a Flight instructor certificate with ratings appropriate to the aircraft in which instruction is being delivered.

7.8.4.2 Meet the requirements of 61.195(h).

7.8.4.3 For simulator platform: Have experience instructing in a multi-crew, multi-engine turbojet (either simulator or on-aircraft instruction).

7.8.5 Multi-Crew, Multi-Engine Flight Operations:

7.8.5.1 Hold an ATP certificate with a type rating in a multiengine turbojet requiring 2 or more crewmembers.

7.8.5.2 Have at least 2 years' experience flying or teaching in multi-crew, multi-engine operations.

7.8.6 Baseline Experience – Evaluators

7.8.6.1 An evaluator shall meet all the requirements of an Instructor, plus the following:

7.8.6.1.1 All-Attitude/All-Envelope Maneuvering:

7.8.6.1.2 A minimum 500 hours of documented flight experience involving all-attitude flight operations in fixed-wing airplanes, including at least one of the following:

7.8.6.1.2.1 Military fighter attack, or all-attitude capable Training aircraft pilot, with at least 2 years' Experience full mission qualified.

7.8.6.1.2.2 Test pilot, with at least 2 years' experience conducting stall/spin testing.

7.8.6.1.2.3 IAC Competition Aerobatic pilot, with at least 2 years competing in the advanced category or higher.

7.8.6.1.2.4 Airshow pilot, with at least 2 years' experience holding a surface-level waiver.

7.8.6.2 Flight Instruction: A minimum of 2 years of full-time experience teaching all elements of the UPRT curriculum being delivered.

7.8.6.3 Multi-Crew, Multi-Engine Flight Operations: A minimum of 2 years' experience on a multi-crew, multi-engine turbojet aircraft.

7.8.7 Proficiency Objectives – Instructors

Confidential: Thrive Aviation Petition for Exemption Page 20 / 24 January 17, 2022

Thrive Aviation: Petition for Exemption

7.8.7.1 Instructors must successfully complete an Instructor Qualification Course approved by AFS-280, as well as be approved by a designated evaluator as described above.

8.0 Exemption Privileges Outside the United States

8.1 The petitioner operates in international air commerce and therefore seeks the exemption to be sufficient to meet the ICAO Annex 6 Part I checking requirement pertaining to the 6-month interval. Therefore, the petitioner requests that the successful completion of UPRT training be deemed equivalent to completion of a 135.297 check.

9.0 Federal Register Summary

- 9.1 Thrive Aviation requests an alteration of §§ 135.297; 135.293; 135.351; through an increase in the number of maneuvers required during a recurrent proficiency check, while replacing other requirements of §§ 135.297; 135.293; 135.351. The enhancements to the curriculum shall meet or exceed the standard described in ICAO Doc. 10011, “The Manual on Upset Prevention and Recovery Training”.
- 9.2 This petition has been filed in a timely way, and in response to numerous recommendations made on the behalf of the FAA Loss of Control Avoidance and Recovery Training (LOCART) Aviation Rulemaking Committee (ARC), ICAO, NTSB, IATA, NBAA and other leading industry organizations. The exemption request goes beyond existing training requirements in a proactive manner to achieve a higher standard of safety than called for in existing regulations.
- 9.3 The petitioner submits that good cause exists not to delay action on this request. The petitioner estimates that a hundred or more operators, with thousands of pilots, will want to follow Thrive’s leadership. The capacity to do this training is very limited, therefore the Administrator should not delay this request.

10.0 Additional Information Supporting the Request

10.1 This section includes additional information to support the rationale for this exemption. 10.1.1 The following chart(s) supports the assertions of this petition:

Confidential: Thrive Aviation Petition for Exemption Page 21 / 24 January 17, 2022

Thrive Aviation: Petition for Exemption



Figure 1

Demand Part 135 Fatalities and Fatal Accidents by Occurrence Category 2008-2017 Worldwide Jet Fleet - 2008 through 2017thri

Thrive Aviation): Petition for Exemption

Fatalities by CICTT Aviation Occurrence Categories

Fatal Accidents | Worldwide Commercial Jet Fleet | 2008 through 2017



Note: Principal categories as assigned by DAST.
For a complete description of DAST/CAO Common Taxonomy Team (CICTT) Aviation Occurrence Categories, go to www.internationalaviation.org.

2017 STATISTICAL SUMMARY, OCTOBER 2018

Thrive Aviation): Petition for Exemption

10.2 The following references were used to develop this petition:

10.2.1 Airplane Upset Recovery Training Aid - Revision 2, November 2008. (n.d.). Retrieved from:
www.faa.gov/other_visit/aviation_industry/airline_operators/training/media/AP_UpsetRecovery_Book.pdf.

10.2.2 Amendment No. 3 To The Procedures For Air Navigation Services, Chapter 7. Upset Prevention and Recovery Training (UPRT). (April 2014). Retrieved from:
<http://www.skybrary.aero/bookshelf/books/3176.pdf>

10.2.3 FAA Advisory Circular 61-138 Airline Transport Pilot Certification Training Program (ATP CTP) including Change 1. (2017, February 13). Retrieved from:
https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentid/1021128

10.2.4 FAA Advisory Circular 120-109A - Stall Prevention and Recovery Training with Change 1. (2017, January 4). Retrieved from
https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentid/1028646

10.2.5 FAA Advisory Circular 120-111 - Upset Prevention and Recovery Training - with Change. (2017, January 14). Retrieved from:
https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/1027328

10.2.6 FAR 121.423 - Pilot: Extended Envelope Training. (2014, January 1). Title 14 U.S. Code - Aeronautics and Space, Chapter I – FAA, DOT, Subchapter G – Air Carriers and Operators for Compensation or Hire: Certification and Operations, Part 121 – Operation Requirements: Domestic, Flag and Supplemental Operations, Subpart N - Training Program, Section 121.423. Document No. FAA-2008-0677, 78 FR 67839AC.

10.2.7 FAA Information for Operators (InFO) 10010: Enhanced Upset Recovery Training. (2010, July 6). Retrieved from:
https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info/all_infos/media/2010/InFO10010.pdf

10.2.8 FAA Safety Alert for Operators (SAFO) 10012: Possible Misinterpretation of the Practical Test Standards (PTS) Language “Minimal Loss of Altitude”. (2010, July 6). Retrieved from:
https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/media/2010/SAFO10012.pdf

10.2.9 FAA Safety Alert for Operators (SAFO) 13002: Manual Flight Operations. Retrieved from:
https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/media/2013/SAFO13002.pdf

Thrive Aviation: Petition for Exemption

- 10.2.10 FAA Safety Alert for Operators (SAFO) 17007: Manual Flight Ops. Proficiency. (2017, May 4). Retrieved from:
https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safo/media/2017/SAFO17007.pdf
- 10.2.11 FAA Pilot's Handbook of Aeronautical Knowledge. (2016). U.S. Department of Transportation FEDERAL AVIATION ADMINISTRATION Flight Standards Service, Retrieved from:
https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/pilot_handbook.pdf
- 10.2.12 Guidelines for Submitting a Petition for FAA Exemption. (n.d.) Petition for exemption from Title 14 of the U.S. Code of Federal Regulations (14 CFR). Retrieved from: https://www.faa.gov/regulations_policies/rulemaking/petition/
- 10.2.13 Guidance Material and Best Practices for the Implementation of Upset Prevention and Recovery Training. (June 2015). Retrieved from
www.iata.org/whatwedo/ops-infra/training-licensing/Documents/gmbp_uprt_2015.06.23.pdf.
- 10.2.14 ICAO DOC 10011. (2014). Retrieved from
https://www.icao.int/Meetings/LOCI/Documents/10011_draft_en.pdf
- 10.2.15 International Civil Aviation Organization, Loss of Control Avoidance and Recovery Training (LOCART) Aviation Rulemaking Committee (ARC) Final Report, (2015, July 6). Retrieved from:
<https://www.icao.int/ESAF/Documents/meetings/2015/LOC-I/LOC-I-DAY2-01-UPRT%20Provisions.pdf#search=locart>
- 10.2.16 Loss of Control Inflight. (n.d.). National Business Aviation Association. Retrieved from: <http://www.NBAA.org/loci>
- 10.2.17 NTSB - National Transportation Safety Board. (n.d.). 2017-2018 Most Wanted List. Retrieved September 5, 2017, from
<https://www.nts.gov/safety/mwl/Pages/default.aspx>
- 10.2.18 NBAA's Safety Resource: Loss of Control Inflight (2016). Retrieved from:
<https://www.nbba.org/ops/safety/in-flight-safety/loss-of-control-in-flight/2017-lo-ci-safety-overview.pdf>
- 10.2.19 FAA Order 8900.1, Volume 3, Chapter 19, Training Programs and Airman Qualifications, D. Retrieved from:
http://fsims.faa.gov/wdocs/8900.1/v03%20tech%20admin/chapter%2019/03_019_001.htm